



BP and Climate Change

California Energy Commission
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BP's position



- There is no single solution
- We believe there are a range of options that, with concerted action, could shift the future course of emissions growth
- We support early action
- Both governments and business have a role in leading society's response to climate change
- We support market mechanisms such as EU emissions trading scheme
- We believe that planning should be based on stabilizing greenhouse gas concentrations in atmosphere to limit world temperature rise to about 2°C

LAX Hydrogen Fueling Station





Service Stations Powered by Solar



What role can businesses play?



Operational businesses:

- Continue to improve the efficiency of our operations
 - Reduce our emissions per unit of production
 - \$350m extra investment in energy efficiency over the next five years
 - Combined heat & power vital piece of the energy efficient portfolio
 - Decarbonised fuel power plant project (350 MW)

Customer facing businesses:

- Continue to grow sales of lower carbon energy sources
 - Produce and market increasing volumes of natural gas
 - Grow our renewables business
- Help customers increase end-use efficiency
 - Develop and launch improved fuels (e.g., ECD-1 low sulphur diesel fuel)
 - Develop fuel-efficient lubricants
 - Flex Your Power at the Pump

What role can governments play?



- Policies:
 - compliment & encourage the development of markets, technology and business investment
- Leadership on climate change requires a timely combination of:
 - appropriately timed regulation,
 - incentives and investments, and
 - based on open and deregulated markets

Summary



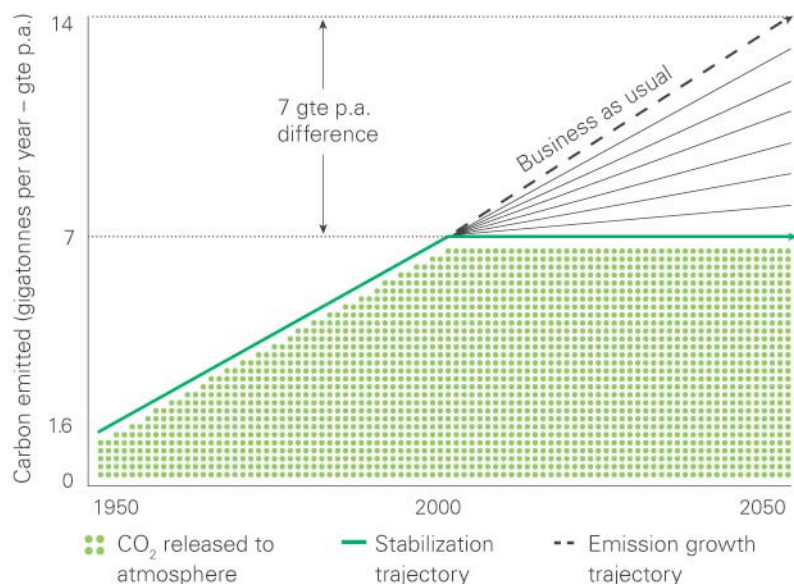
- Business development
 - Creation of incentives and support to establish new and competitive businesses
- Market development
 - ETS (Emissions Trading Scheme) to support engagement of business
- Technology development
 - R&D and demonstration projects in those areas identified as attractive 1Gtc 'wedges'

Back-up slides

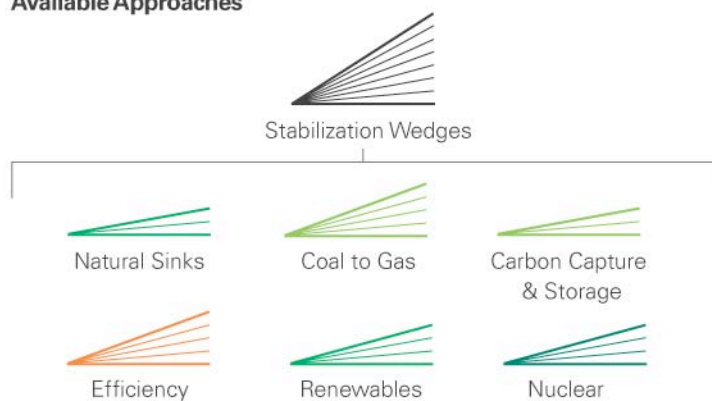




Stabilizing global emissions



Available Approaches



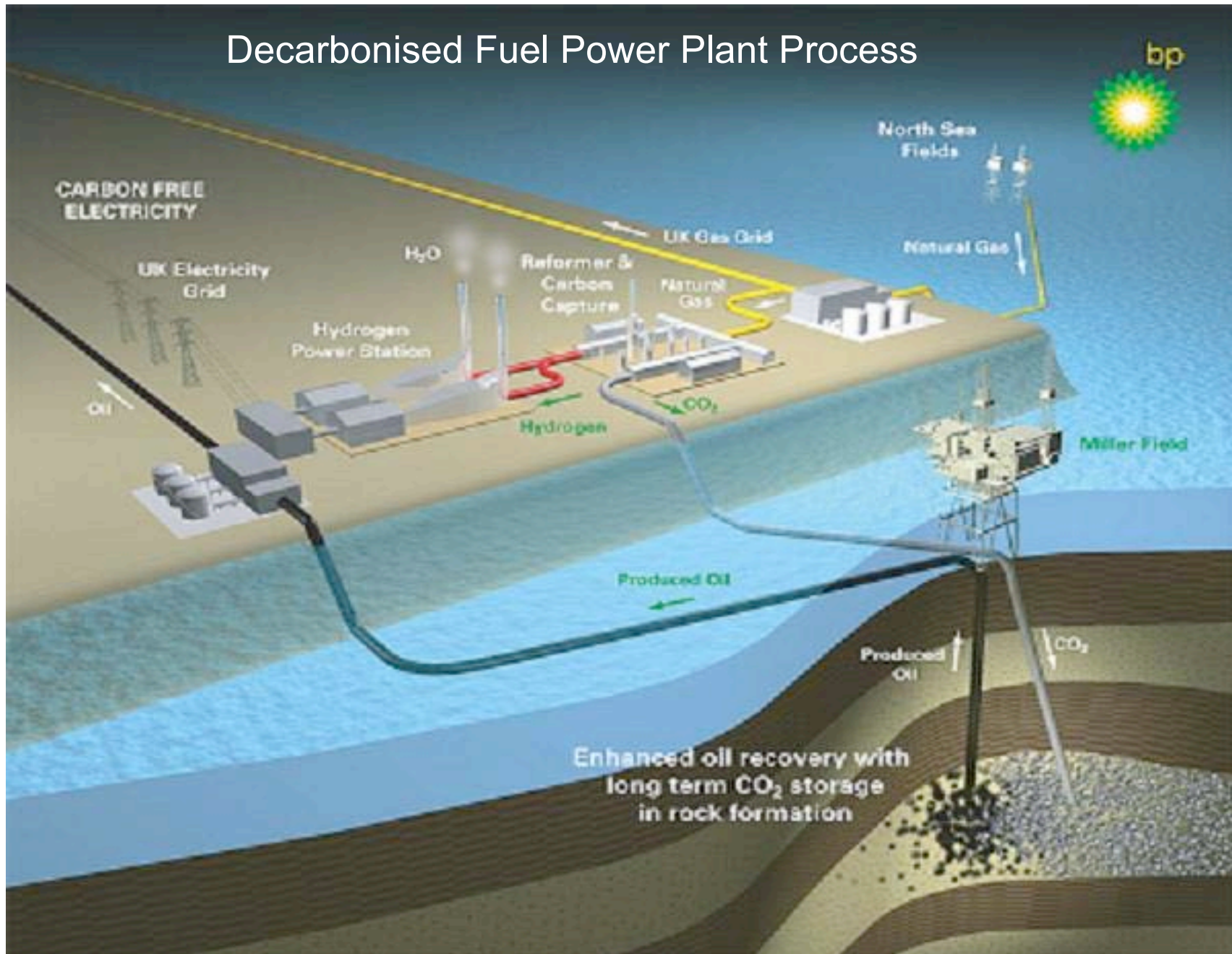
- We have a simple model that illustrates a series of actions ('wedges') that could each reduce annual emissions by 1 billion tonnes of carbon by 2050
- Examples of a 'wedge' include:
 - gas replacing coal in 1,400 large new power stations
 - doubling the fuel efficiency of 2 billion cars
 - major increases in renewable energy
- Many of these actions align to BP's business strategy and current activities



1Giga tonne (carbon) wedge

Business Sector	1Gtc per year Wedge
Fuel switching	1400 GW fuelled by gas instead of coal
Coal plants with sequestration	700 1GW power plants
Geological sequestrations	3500 Sleipners or In Salahs, at 1MtCO ₂ /year
Hydrogen fuel	1 billion H ₂ cars displace 30mpg gasoline/diesel vehicles
Energy efficiency improvements	Carbon intensity per \$GNP drops 0.2% faster than in past
ICE efficiency	2 billion gasoline and diesel cars with 60mpg rather than 30mpg
Solar pv displaces coal	1000 X current capacity, i.e. 5Mha
Wind displaces coal	70 X current capacity
Nuclear displaces coal	700 1GW plants, i.e. 1.5 X current capacity
Biofuel displaces petroleum	200Mha, growing @ 7.5tc/ha per year (= US agricultural land)
Re-forestation	700Mha, growing @ 2tc/ha per year

Decarbonised Fuel Power Plant Process





The role of research

BP actively supports educational institutions and organizations respected for scientific excellence:

- **Stanford University**
 - Three-year interdisciplinary program examining the long term infrastructure demands associated with shifts in energy sources, and investigate how production and consumption of energy affect sustainable development
- **Princeton University**
 - Long term sponsorship of the Carbon Mitigation Initiative (co-sponsored with Ford) researching carbon capture and storage, transitions to a hydrogen economy, consequences of human interventions on the carbon-cycle
- **The Cambridge-MIT Institute**
 - Five-year programme to design more energy efficient buildings
- **Carbon Capture Project (CCP)**
 - BP is leading a joint project of eight major energy companies and DOE working to reduce the cost of capturing and geologically storing CO₂.
- **DOE Carbon Sequestration Leadership Forum**
 - International program focused on CCS. The Midwest Regional Carbon Sequestration Partnership identify local sources of CO₂, geologic storage options, and works with the public and policy makers to develop recommendations